ABSTRACT OF THE DISCLOSURE

The demodulator of the invention includes a DSP. The DSP determines the distortion amount of the transmission channel based on known signals included in a radio receiving signal, and estimates the frequency of the direct wave based on the distortion amount. Furthermore, the DSP rotates the phase of the distortion amount based on the phase amount corresponding to the estimated frequency of the direct wave. Next, the DSP estimates the center frequency of the Doppler spread based on the distortion amount after the phase is rotated. Furthermore, the DSP synthesizes the phase amount corresponding to the estimated center frequency of the Doppler spread and the phase amount corresponding to the frequency of the direct wave to estimate the last frequency offset. Thereafter, the DSP eliminates frequency offset of the radio receiving signal based on the estimated frequency offset. Thereby, a sufficient frequency offset compensating range can be secured, and excellent BER characteristics can be realized.